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Racial and Economic Factors in Attitudes to Immigration

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Non-Technical Abstract

Economic approaches to the political economy of immigration tend to focus on the effects of immigration within models of labour market competition. Concerns about the welfare system may however be an additional factor to fuel hostility towards immigration if immigrants are considered to be competitors for these resources. Hostility towards immigration may also however have cultural motivations that are unrelated to any economic considerations.

We try to separate racial and economic components to attitudes towards immigration empirically using evidence on attitudes in the UK. Our analysis is based on the British Social Attitudes Survey 1983-1991, which includes questions on attitudes towards immigration from a number of different minority groups, as well as attitudes towards related concerns, like job security, benefit expenditures and racial tolerance.

Based on this unusually rich data source, we relate expressed opinions on immigration policy to responses regarding these related concerns. Our results point to association of hostility to immigration with concerns in all of these three dimensions but it is expressions of racial intolerance which are most strongly connected to hostility to immigration, particularly where immigration is from countries with predominantly nonwhite populations.

We separate our samples according to education and skills and find that the dominant role for racial concerns emerges most strongly for less educated and lower skilled sections of the population for whom we can find no strong evidence for the hypothesis that labour market concerns lead to opposition towards further immigration.

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Racial and Economic Factors in Attitudes to Immigration

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Abstract

The few economically motivated papers on attitudes towards migration interprets results within models of labour market competition. Concerns about the welfare system may however be an additional factor to fuel hostility towards immigrants if they are considered to be competitors for these resources. Hostility towards immigration may also have racial motives that are unrelated to any economic considerations. We try to separate racial and economic components to attitudes towards immigration. Our analysis is based on the British Social Attitudes Survey, which includes questions on attitudes towards immigration from different minority groups, as well as attitudes towards related concerns, like job security and benefit expenditures. Based on this unusually rich data source, we relate preferences towards immigration to the three factors by specifying and estimating a multiple factor model. Our results suggest that racial issues are considerably more important than economic concerns in driving attitudes, and particularly so amongst less educated and lower skilled sections of the population. We do not find strong evidence for the hypothesis that labour market concerns among manual and unskilled workers lead to opposition towards further immigration.

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1 Introduction

The debate on immigration features highly on the political agenda both in Europe and in the US. Regulations concerning immigration are frequently adjusted to changes in the economic situation, and re-designed so as to accommodate shifts in general attitudes of the public towards immigration. The economic consequences of immigration for the native population, the perceived effects on cultural identity and social cohesion, and the strong feelings involved make this a topic which figures prominently in electoral campaigns. To understand what drives individual preferences over immigration policies is therefore an important research area, both for descriptive political economy and for policy design.

The way in which individuals from the native population perceive the effects of immigration on the labour market is likely to be one prime candidate for influencing preferences over further migration. The process which forms preferences may relate to basic intuitions about labour market equilibria. Economic theory is far from establishing a presumption that effects on native wages or employment need be harmful. Indeed in general equilibrium models with a greater number of tradable products than factors of production, provided immigration induces no change in the set of goods produced, its long run impact will be felt in quantities produced rather than in wages or employment (see, for example, the discussions in Leamer and Levinsohn 1995, Borjas 1999b, Gaston and Nelson 2000). At the same time, empirical evidence establishing the existence of adverse effects is scarce (see Borjas 1994, 1999b, and Friedberg and Hunt 1995 for overviews[1]). Nevertheless simple models with a single output good and multiple labour types do point to a possibility for immigration to harm certain workers

[1]Many of these studies relate to the US (for example, Altonji and Card 1991, Borjas, Freeman and Katz 1996, Card 1990, 2001, Lalonde and Topel 1991) and typically use microdata from the US census. Work on other countries includes Pischke and Velling (1994) and de New and Zimmermann (1994, 1999) for Germany, Hunt (1992) for France, Carrington and Lima (1996) for Portugal and Winter-Ebmer and Zweimüller (1996, 1999) for Austria. The predominant, though not universal, conclusion of most of this work is that the impact of immigration on wages and employment in local labour markets is modest. See however Borjas (2002) for a recent contrary view.

and it is not unlikely that individual perceptions of labour market threats accord with the predictions of such models.

Labour market competition may however not be the only economic concern which forms preferences towards immigration. According to Borjas (1999a, p.105), the second economic issue in the historical debate over immigration policy in the United States is whether immigrants pay their way in the welfare system. He argues that in the US, immigrants receive a disproportionately large share of the welfare benefits distributed. Borjas (1997) draws attention to the possible impact of immigration on dependency ratios, and the consequent effects on cost of the benefit and social security systems. Since, under progressive taxation, the implied tax burden will bear more heavily on richer households, this provides a possible reason for greater concern among those with higher incomes. Fetzer (2000, p.14) notes the opposing implications of economic theories: "While the labor market hypothesis tends to see xenophobia arising among the economically disadvantaged, the use-of-services interpretation instead expects anti-immigrant resentment primarily among the affluent".[2] On the other hand, if the budget for welfare expenses is fixed, those at the bottom end of the distribution will suffer more.

In fact, there is evidence that public opinion is guided by the view that more immigrants are an additional burden on the welfare system. Studlar's (1977) empirical study of popular British attitudes to immigration in the 1960s concludes that the facts regarding the economic impact of immigration "have not erased the erroneous mass perceptions of the relationships among immigrants, the economy and welfare services, perceptions on which people base their immigration opinions." *The Economist* (Vol. 355, 2000), in an editorial sympathetic to relaxed immigration policies into Europe, bluntly summarises the hostile sentiments that form a barrier to implementation of such policies: "These new arrivals are popularly perceived as welfare-scroungers, job-snatchers and threats to stability". Simon (1989) provides a history of anecdotal evidence on public opinion towards further immigration, where both welfare consider-

[2]However the hypotheses may not be directly opposing. In one case it is low skills that matter and on the other high incomes.

ations and labour market fears are the two major concerns.

In addition to these two economic determinants, there is a third factor which may shape preferences about further immigration. Opposition to immigration may be motivated by reasons which relate to the cultural and ethnic difference of the immigrant population. Prejudices of this kind may arise from various sources. They may be fuelled by a fear of loss of national characteristics or a taste for cultural homogeneity. Cultural and ethnic distance may severely hinder the social integration process, and this may be considered as inducing social tensions and costs. There is ample evidence that deeply rooted hostility exists towards immigration groups with largely different cultural and ethnic background and this hostility manifests itself in remarks of politicians and opinion leaders. For instance, the then opposition leader and future British Prime Minister Margaret Thatcher referred in a 1978 television interview to a British fear of being "rather swamped by people with a different culture" (Layton-Henry, 1992, p. 184). The tone of recent UK debate over asylum seekers, with recurrence of the language of "flooding" and "swamping," drew condemnation from the United Nations High Commissioner for Refugees (8 April 2000).

This discussion suggests that racial attitudes, labour market concerns, and welfare concerns are three main factors which shape individual preferences towards further immigration. Recent papers by Scheve and Slaughter (2001), Gang, Rivera-Batiz and Yun (2002), Mayda (2002), Schmidt and Fertig (2002), and O'Rourke and Sinnott (2003) analyse the determinants of individual preferences over immigration policies in several countries. In some of these papers, an empirical association between labour market status and attitudes is established and argued to be consistent with a determining role for labour market competition. Bauer, Lofstrom and Zimmermann (2001) also point to lower levels of hostility to immgrants among the more educated.[3]

Correlation between labour market characteristics and attitudes is, however, likely to be a fragile basis for assessing the strength of labour market concerns in determin-

[3]Related issues come up also in the literature on preferences on trade policies - see for instance papers by Mayda and Rodrik (2001), Scheve and Slaughter (2001) and O'Rourke and Sinnot (2001).

ing attitudes for several reasons. Firstly, it is not always obvious which groups in the labour market should be regarded as strongest competitors with potential immigrants and it is therefore not easy to tell convincingly whether correlations which are found are consistent or not with stories based on labour market competition. Secondly, educational background and the labour market status of natives are likely to affect attitudes towards further immigration not only via this factor. Skilled workers may, compared to unskilled workers, favour less restrictive immigration regulations because they have less to lose in terms of wages. In addition, however, educational background may form preferences towards further immigration because the better educated may have less pronounced racial prejudices, or they are less affected by possible welfare consequences. In consequence, simply noting an empirical association between characteristics like education and attitudes does not establish the primacy of labour market competition as a driving factor. Citrin, Green, Muste and Wong (1995), for example, in their careful study of US attitudes, note how the significance of labour market characteristics as predictors of attitudes can be sensitive to inclusion of further attitudinal regressors.

An alternative approach seeks to determine the relative contributions of these forces using correlations between attitudinal responses informative directly about hypothesised underlying concerns. We implement such an approach, basing our analysis on various waves of the British Social Attitudes Survey, spanning the period between 1983 and 1990. This extremely rich data set allows an analysis which marks an advance on previous work in several important respects. Firstly we make use of the breadth of questions in the data source to relate preferences about immigration directly to the three factors discussed above, which we refer to as racial prejudice, labour market concerns, and concerns about the welfare system. We attempt to separate the relative effects of these three components on preferences towards immigration by using information about concerns which relate directly to attitudes towards race, the labour market and welfare.

No single question is likely to pick up these concerns uniquely and accurately but if there are a number of questions addressing each dimension of concern then we can

use the correlations among responses to identify the common component. In order to make efficient use of information from answers to the wide range of related questions speaking to these hypothesised latent concerns in the data we specify and estimate a multiple factor model. Such an approach should produce more reliable results than relying on answers to single questions imprecisely capturing relevant concerns. Our exposition includes a careful and thorough discussion of relevant identification issues.

Secondly our data set is unusual in distinguishing explicitly between attitudes to immigration from different countries of origin. Preferences towards further immigration are likely to differ according to the origin of the potential immigrant, and the degree of ethnic and cultural distance. Our second contribution is to separate the role of the three factors in driving attitudes regarding clearly distinguishable immigrant groups. To achieve this, we differentiate between immigrant groups with different degrees of cultural and ethnic distance from the majority population. Racial prejudice is related to the ethnic origin of immigrants, and may be more pronounced, the more dissimilar the immigrant population is ethnically and culturally.

Thirdly the data set contains extremely specific geographical information on respondents, allowing us to merge in objective environmental information at a very precise spatial level on local unemployment and ethnic composition.

Among the native population, we distinguish between different occupation groups (separating manual and non-manual workers), and different education groups (separating low, medium and high education groups). This allows us to directly investigate the association of racial prejudice, labour market concerns, and welfare concerns with preferences towards more migration across different skill levels. We therefore use a more direct approach than Scheve and Slaughter (2001) in assessing whether the differences in relative preferences towards further immigration across skill groups are compatible with predictions of simple equilibrium trade and labour market models. Furthermore, the distinction made in our data between immigrants of different ethnic and cultural background allows us to assess the relative association of each of these factors with preferences towards further immigration for different skill groups, and across immigrant

populations of different ethnic and cultural dissimilarity.

Our findings establish that both economic and racial factors appear to matter but suggest that race is the dominant underlying issue. While it is not surprising that either should play a role the relative extent of their importance is a point on which no consensus is apparent in the literature and on which it is hoped that the results of this paper offer useful information.

The structure of the paper is as follows. Section 2 provides a brief overview of migration to the UK, documents skills and occupational achievements of immigrants, and discusses the data we use. Section 3 reviews some theoretical issues regarding the economic and cultural impact of immigration on interests of different groups in the population. Section 4 outlines our econometric model, and explains estimation and identification of the parameters. Section 5 presents and discusses results, and section 6 concludes.

2 Immigrants in the UK

At the end of the second world war, the non-white immigrant population of the UK can not have numbered more than one per cent of the population (Spencer 1997). Immigration law at the time, embodied in the 1948 British Nationality Act and 1905 Aliens Act, distinguished formally between two types of foreign-born individuals: Commonwealth and non-Commonwealth citizens. All Commonwealth citizens notionally enjoyed unrestricted freedom to enter the UK, though Spencer (1997) convincingly argues that this was largely a convenient myth, disguising efforts to restrain 'coloured' immigration at points prior to entry through administrative practice and collusion with Commonwealth administrations.

Legal restrictions on the rights of immigration of British subjects were first introduced in the 1962 Commonwealth Immigration Act. Entry for settlement without family bonds to individuals already in the UK became conditional on issue of job vouchers in various categories requiring pre-arranged jobs, possession of special skills

or domestic needs for labour. In the subsequent decade, immigration regulations were progressively tightened in view of continued black and Asian immigration at a rate of 30,000 to 50,000 people per year (see Wheatley-Price and Hatton 1990, Spencer 1997, Money 2000, for more details). The 1971 Immigration Act finally brought an end to the privileged position of Commonwealth citizens, replacing the previous distinction between aliens and British subjects with one between 'patrials' and 'non-patrials'. This latter distinction essentially ended the settlement entitlements of non-white overseas Commonwealth citizens. At the same time, Britain joined the European Community and adhered to treaties which gave individuals the right of free movement across community countries. The 1980s and 1990s saw continuing restrictive reforms to immigration legislation.

In accordance with these regulations, immigration of Commonwealth citizens was most pronounced in the two decades after the war. The arrival of the *Empire Windrush* in 1948 with several hundred immigrants from Jamaica has come to symbolise the commencement of large scale non-white immigration from New Commonwealth countries. While the early 1950s were characterised by migration from the Caribbean, in the late 1950s a growing number of immigrants arrived from the Indian subcontinent. Later migrants arrived from Pakistan and Bangladesh. Labour market shortages in the period after the war led also to recruitment of European workers to fill certain labour market shortages. These workers were predominantly from Southern Europe, but also from Poland. After the 1971 act, an increasing fraction of immigration was due to family unification, which remained for a time largely unrestricted. Favourable economic conditions in Europe prevented large migrations after 1971. Governmental response to the Ugandan Asian crisis of 1972 nevertheless led, despite the restrictive legislation by then adopted, to a renewed boost in settlement of Asian origin.

In table 1 we report some characteristics of the population of foreign born individuals, based on the 1992 Labour Force Survey. Clear educational differences are evident between native and the foreign born, with greater proportions of immigrants not having completed secondary education. On the other side, a higher proportion of immigrants

Table 1: Selected Characteristics of Native and Foreign-born, LFS 1992

Variable	**Natives**	**Foreign Born**	**West Indian, African**	**Bangladesh, India, Pakistan, Uganda Asian**	**Europe** [d]	**New Commonwealth** [e]
Below Compulsory Education[a]	27.16	33.78	33.40	47.90	33.32	11.49
Intermediate Education[b]	62.90	51.00	55.54	40.51	56.78	62.66
High Education[c]	9.91	15.20	11.04	11.57	9.87	25.83
Age	38.68	39.61	41.62	39.94	41.57	35.12
Years of Residence	–	22.10	22.03	21.30	25.77	18.86
Age at arrival	–	18.51	20.58	19.63	16.79	17.26
Year of arrival	–	1970	1970	1971	1967	1974
Numbers in Sample	314225	28045	2898	9770	7150	1618

[a]: Below (Equivalent of) O'levels; [b]: (Equivalent of) O'levels or A'levels; [c]: College of University; [d] Citizens of countries of the EU as of 1992, including Ireland. [e]: Australia, Canada, New Zealand, South Africa.

have been educated beyond secondary level. If we brake down these figures according to origin (where we have chosen origin so as to resemble most closely the suggested origin regions in the set of questions on preferences to further immigration), we see that there is large variation in educational background. The fraction of immigrants with education beyond secondary level is for each origin at least as high as it is for the native population. However, with the exception of immigrants from New Commonwealth countries, the percentage of individuals below compulsory education is likewise higher. By far the best educated are individuals from the New Commonwealth countries. Immigrants from Europe resemble quite closely Natives in their educational structure. Average age of natives and immigrants is similar on average, but varies quite considerably across origin groups, with immigrants from the New Commonwealth countries being the youngest. Immigrants are young upon arrival, with, on average, 22 years of residence in the UK.

3 Data and Descriptives

Our attitudinal data is drawn from seven years of the British Social Attitudes Survey (1983, 1984, 1985, 1986, 1987, 1989, 1990). We use the data for England and concentrate on white respondents only.[4]

3.1 Attitudes

The BSA survey asks, for several years, questions concerning opinions about immigration from different origin countries. Specifically, distinctions are drawn between immigration from the West Indies, from India and Pakistan,[5] from other countries in

[4]Racial identity is self-assessed. Attitudes of ethnic minority individuals towards their own communities, or towards other ethnic minorities, are likely to be driven by different mechanisms. While it might be interesting to investigate their attitudes, the sample sizes within the BSA become very small when considering attitudes of minorities only.

[5]Throughout the paper, we refer to this source of immigration as "Asian", in line with wording typically used in the BSA.

the European common market, and from New Zealand and Australia.[6] We create binary variables for all these responses. In Appendix D, we report the full wording of the original questions and some summary statistics.

Using the methodology we describe in section 5, we decompose these attitudes into the three factors we have discussed above. For that purpose, we use an array of questions which are specific to the suggested underlying concerns of respondents. In particular, questions related to race comprise opinions on inter ethnic marriage, acceptability of an ethnic minority superior at work, and self rated prejudice against minorities. Questions related to labour market concerns include fear of job loss, perception of job security, perceived ease of finding a new job, and expectations of wage growth. Finally, questions related to welfare concerns cover opinions on generosity of benefits, needs of welfare recipients, and preparedness to pay higher taxes to expand welfare provision. Again, the exact wording of the questions and summary statistics are given in Appendix D.

Not all of these questions were asked in every year. The number of usable responses to each question in each year is summarised in Appendix B in table A1, where usability is determined by availability of data on both regressors and dependent variables. In our estimation procedures, we make maximum use of the available data. All observations covered in table A1 are used.

3.2 Regressors

The survey has extensive socioeconomic information on respondents, including education, income, age, religion, and labour market status. In Table 2 we report summary statistics on variables we use to explain attitudes. We use two variables describing the characteristics of the locality of residence: the unemployment rate, and the concentration of ethnic minorities. In both cases, we measure these variables at the county level to minimise endogeneity issues arising from location choice (see Dustmann and

[6]The wording of these questions changed in 1991. Therefore, we restrict our analysis to the surveys up to 1990.

Table 2: Sample Statistics

Variables	**Mean**	**StdD**
Unemployment rate, County level	0.0437	0.0203
Ethnic minority concentration, county	0.0262	0.0285
Rank in Income Distribution	0.5008	0.2877
Manual worker	0.4555	0.4980
Ever unemployed	0.1687	0.3745
Ever long term unemployed	0.0609	0.2392
Female	0.5368	0.4986
High Education Level	0.1017	0.3022
Low Education Level	0.4991	0.5000
Age	45.936	17.706
Catholic	0.1005	0.3007
No religion	0.3462	0.4757

Preston, 2001, for a discussion of endogenous location).[7]

We relate attitudes to a set of variables that describe the individual's own characteristics, like their income situation, labour market characteristics, education, age, sex, and religious beliefs, and variables that describe the individual's environment, like the local unemployment rate, and minority concentrations. The household income variable is reported in banded form in the data. Rather than calculating a continuous measure in units of income, we have computed the average percentile point of households in that band in the income distribution, for the specific year in which the individual is interviewed. When thinking about the effect of income on attitudes, we have in mind the effect of the relative position of the individual in the income distribution, rather than some absolute income measure. Our definition of household income seems therefore quite natural in this context.

The average age of individuals in the sample is about 46 years. Age is likely to affect attitudes for several reasons. First, it is a direct measure of life experience. Second, it marks the position of the individual in their economic cycle. At some stages of this cycle, individuals' attitudes may be more strongly affected by economic considerations.

[7]County is an administrative unit, covering on average 1.27 million people, and corresponding plausibly to a local labour market.

Table 3: Migration attitudes, different segments

	All	Manual	Non-Manual	High Ed.	Medium Ed.	Low Ed.
Response	**Mean**	**Mean**	**Mean**	**Mean**	**Mean**	**Mean**
West Indian	66.46	69.48	65.56	50.45	55.05	70.36
Asian	70.58	75.08	68.46	50.36	68.90	75.61
European	46.21	51.19	43.19	30.80	44.91	50.09
Australians, New Zealand	33.19	34.63	32.96	27.17	35.38	33.62

Response variable: 1 if prefers less settlement of respective population group.
Respondents: white.

Finally, the age variable captures cohort effects.

We also include dummy variables indicating whether the individual is a manual worker, has ever been in unemployment, either short or long term, and is female.

We classify people into three education categories. We allocate individuals to the high education category if they remained in education beyond age 18, and to a low education category if they did not remain in school beyond either age 15, or the compulsory school leaving age (whichever is earlier). Education is likely to affect attitudes for several reasons. Higher education may shape attitudes by exposing the individual to a wider range of views. Education is also likely to pick up aspects of peoples' long term economic prospects which are not captured by the before mentioned variables.

We have also added two variables on religious beliefs, reflecting whether the individual is Catholic, or not religious. Attitudes may be influenced both by the high weight placed by many religions on the virtue of tolerance but also by any tendencies to particularism that may be associated with specific creeds. It is also possible that religious affiliation may reflect historic experiences of persecution or current feelings of marginality (Fetzer 2000) of particular groups of the population.

3.3 Descriptive Results

In table 3 we report responses to the questions regarding further immigration for different education groups, and for manual and non manual workers.

The numbers indicate that the majority of respondents oppose further settlement of ethnically different populations (the first two rows in the table), with manual workers having a slightly more negative attitude than non-manual workers. Across education groups, there is a clear tendency towards support for a more restrictionist immigration policy, the lower the educational background of the respondent. For all potential immigrant populations, the same pattern is evident, but preferences towards further immigration become more supportive, the less ethnically different the immigrant population. For Australians and individuals from New Zealand, there is no majority of respondents in any group favouring less settlement.

Of course, it is dangerous to read too much into these simple comparisons, since typical migrants from ethnically different origins are also likely to differ in typical skill composition, as can be seen in table 1.

These simple conditional means do indicate some relationship between preferences towards migration, and the ethnic distance of the migrant population in question. They also suggest different preferences according to skill level. However, they do not control for other determinants of preferences towards further immigration. As a next step, we estimate probit models, where we add, besides occupational status and education, regressors which characterise the individual and the individual's environment. Means of the variables are given in table 2.

In table 4, we report marginal effects, evaluated at the sample mean. The reported coefficients on binary variables are the differences in probabilities between the groups for which the binary variable takes the value unity and the base group.

To reflect the skill level of the individual, we include binary variables for low and high education, with intermediate education being the excluded category. We also add a binary variable for manual workers.

The education variables are all strongly significant. Overall, our estimates indicate that the more educated are more favourable towards further immigration. These findings are in line with those of Scheve and Slaughter (2001), of Bauer, Lofstrom and Zimmermann (2001) and of Citrin, Green, Muste and Wong (1997). There is an

Table 4: Immigration Probits

Variable	Less West Indian		Less Asian		Less Euro		Less Australian	
	Coeff	t-ratio	Coeff	t-ratio	Coeff	t-ratio	Coeff	t-ratio
Unemployment rate	-0.3445	-0.74	-0.6683	-1.51	0.4196	0.86	-0.1918	-0.42
Ethnic minor. conc.	-0.0075	-1.06	0.0017	0.11	-0.0002	-0.03	0.0036	0.51
Income Rank	0.0983	3.18	0.0809	2.74	0.0307	0.93	0.0594	1.92
Manual worker	0.0058	0.37	0.0293	1.93	0.0476	2.84	0.0107	0.68
Ever unemployed	-0.0149	-0.68	-0.0065	-0.31	-0.0072	-0.30	0.0104	0.47
Ever long term unemp.	0.0181	0.50	-0.0168	-0.48	0.0145	0.37	-0.0501	-1.38
Female	0.0023	0.16	-0.0002	-0.02	0.0202	1.30	0.0065	0.44
Compulsory Education	0.0482	2.85	0.0683	4.20	0.0459	2.57	0.0072	0.43
High Education Level	-0.1505	-5.80	-0.1722	-6.85	-0.1234	-4.54	-0.0974	-3.94
Age	0.0522	2.14	0.0299	1.29	0.1217	4.69	0.1640	6.48
Age^2	-0.0018	-0.72	-0.0017	-0.30	-0.0103	-3.91	-0.0184	-7.00
Catholic	-0.0691	-2.82	-0.0747	-3.16	-0.0296	-1.15	-0.0305	-1.25
No religion	0.0145	0.94	0.0002	0.01	0.0175	1.06	0.0272	1.74
Sample size	4624		4650		4638		4644	

Marginal Effects, evaluated at sample means.
All Estimations include time dummies.

interesting pattern of preferences across different origin countries. While the highly educated are on average 17 percentage points less likely to be in favour of restrictive immigration policies towards immigrants from Asia (as compared to individuals with intermediate education), this reduces to 15 points for immigrants from the West Indies, to 13 for immigration from Europe, and to 9 for immigration from Australia and New Zealand. Similarly, when comparing individuals in the lowest education category with individuals with intermediate education, the sharpest differences are for immigration from Asia, while differences in preferences regarding immigration from Australia and New Zealand seem to vanish. Manual workers seem to be more supportive of more restrictionist migration policies, but the difference, conditional on other characteristics, is significant only for Europeans and Asians. This suggests that the association of education with attitudes towards further immigration changes with the degree of cultural and ethnic distance of the prospective immigrant population, with differences

being largest across occupational groups for the most ethnically divers groups.

The effect of our income measure, which is the rank of the individual in the income distribution in that particular year shows that individuals in higher quantiles of the distribution are more opposed to further immigration. Other things being equal, an individual one decile higher in the income distribution appears to be about one percentage point more likely to oppose further Asian or West Indian immigration. Interestingly, this estimated income effect is in accord with what would be expected if those bearing a higher burden of any imagined tax consequences were more opposed to immigration (see Fetzer 2000).

Overall, our findings echo those of Scheve and Slaughter (2001), who estimate similar models for the US. They take these findings as being supportive of the view that preferences for further immigration are distributed across skill groups according to predictions of simple equilibrium models. Our results have also indicated however that the origin of the potential immigrant population may relate to the way views on further immigration differ across education groups, which suggest that racial prejudice is an additional important factor to explain these preferences. To further explore this hypothesis, we now turn to a more structural analysis, by trying to isolate the direct effect of racial attitudes, labour market concerns, and welfare concerns on preferences towards further migration.

4 Separating Factors in Attitudes to Immigration

4.1 Econometric Specification

The main objective of our empirical analysis is to identify the contribution of racial prejudice, welfare concerns, and labour market concerns in forming attitudes towards further migration. Other studies (Scheve and Slaughter 2001, Gang, Rivera-Batiz and Yun (2002), Citrin, Green, Muste and Wong 1997) add responses to individual questions about, say, racial tolerance to regressions explaining openness to immigration as a way of capturing the role of such considerations. In all of these papers, racial

intolerance is found to be a significant determinant of immigration attitudes. However answers to a single question are liable to pick up the underlying attitude with considerable measurement error. The BSA data contains answers to several pertinent questions for each of the hypothesised dimensions to attitudes that we wish to consider. We can use this multiplicity to isolate the common element to responses, efficiently identifying the underlying variation of interest but to do so requires developing a model of the type we now proceed to outline.

What we propose to do is not dissimilar to the idea of taking leading principal components of responses, rotating to sustain an attitudinal interpretation and regressing immigration responses on the resulting scores. However the model allows us to impose strong identifying restrictions avoiding concerns about identification and invariance to rotation typically associated with conventional factor analysis. We also take full account of the discrete nature of questionnaire responses, correctly derive standard errors accounting for imprecision at all stages of estimation and report tests of the extensive overidentifying restrictions involved in our approach.

To begin with, we observe only discrete responses to the immigration questions y_i and we assume corresponding latent variables y_i^*:

$$y^* = f\,\Lambda + X\,A + u\,, \tag{1}$$

where y^* is an $n \times m$ matrix of latent attitudinal responses to m immigration questions for n individuals, and A is a $k \times m$ matrix of conditional responses of attitudes to k other observed characteristics X. The matrix f is an $n \times p$ matrix of factor scores capturing the p underlying dimensions to attitudes towards immigration, and Λ is a $p \times m$ matrix of factor loadings, which map the factor scores into the attitudinal responses. In our case $m = 4$ since there are four sources of immigration covered by the BSA questions and $p = 3$ with factors corresponding to race, labour market and welfare concerns. We assume that the error terms in the $n \times m$ matrix u are normally distributed, with $u \sim N(0, \Sigma_u)$, and uncorrelated with either X or f.

The factors are themselves allowed to be influenced by the regressors X:

$$f \;=\; X\,B \;+ v\,, \tag{2}$$

where B is a $k \times p$ matrix of coefficients in the underlying lower dimensional model. We assume that $v \sim N(0, \Sigma_v)$. The assumption that u is uncorrelated with X or f implies that u and v are not correlated.

As we discuss above, the factors are not directly observable phenomena. Instead, we observe an array of responses to q questions on issues which are each strongly related to one or other of these factors. These include three sets of questions. First, questions indicating racial attitudes: specifically, attitudes towards inter ethnic marriage, having a minority boss, and self admitted prejudice against minorities. Secondly, there are questions regarding labour market security: specifically questions on fear of job loss, ease of finding a job and expected future wage paths. Thirdly, there is a set of questions indicating welfare concerns, including a question on adequacy of benefit levels, perception of recipients' need, and willingness to pay for increased public social spending. Again, only discrete outcomes on these variables are observed. The latent indices relate to the factors as follows:

$$z^* \;=\; f\,M \;+\; X\,C \;+ w\,, \tag{3}$$

where z^* is a $n \times q$ matrix of latent responses, M is a $p \times q$ matrix of factor loadings, C is a $k \times q$ matrix of conditional responses to X, and w is an $n \times q$ matrix of error terms, which are distributed normally, with $w \sim N(0, \Sigma_w)$. As with u, w is assumed uncorrelated with X and f and therefore also with v. Since the questions have been chosen to be indicative solely of responses to specific factors we make an assumption of block diagonality on M which is important in establishing identification.

This structure implies an estimable reduced form, which can easily be obtained by substitution. Let Y^* denote the stacked vector of latent responses, $Y^* = \begin{pmatrix} y* \\ z* \end{pmatrix}$. We then obtain

$$Y^* = X\,\Gamma + \epsilon\,, \tag{4}$$

where

$$\Gamma \;=\; B \begin{pmatrix} \Lambda \\ M \end{pmatrix} + \begin{pmatrix} A \\ C \end{pmatrix} \equiv \begin{pmatrix} \Gamma_1 \\ \Gamma_2 \end{pmatrix} \tag{5}$$

is the $(m+q) \times k$ matrix of reduced form coefficients and

$$\epsilon \;=\; v \begin{pmatrix} \Lambda \\ M \end{pmatrix} + \begin{pmatrix} u \\ w \end{pmatrix}.$$

Then $\epsilon \sim N(0, \Sigma_\epsilon)$, where

$$\Sigma_\epsilon \;=\; \begin{pmatrix} \Sigma_u + \Lambda\,\Sigma_v\,\Lambda' & \Sigma_{uw} + M\,\Sigma_v\,\Lambda' \\ \Sigma'_{uw} + \Lambda\,\Sigma_v\,M' & \Sigma_w + M\,\Sigma_v\,M' \end{pmatrix} \equiv \begin{pmatrix} \Sigma_{11} & \Sigma_{12} \\ \Sigma'_{12} & \Sigma_{22} \end{pmatrix} \tag{6}$$

is the $(m+q) \times (m+q)$ variance-covariance matrix of the reduced form residuals and Σ_{uw} denotes $E(uw')$. After estimating the reduced form coefficient matrix, and the variance covariance matrix, we impose restrictions on these coefficents by minimum distance to identify the parameters of interest in Λ. Identification and details of the estimation are given below.

4.2 Estimation

Our estimation strategy proceeds in two stages.[8] The reduced form (4) has two kinds of parameters: Coefficients Γ and variance-covariance parameters Σ_ϵ. In stage 1, we estimate the coefficients of each equation (corresponding to the rows of Γ) separately by independent (ordered) probits. In the second stage, we take each pairing of questions successively and estimate the corresponding off-diagonal component of Σ_ϵ by bivariate

[8] All programs are written in GAUSS by the authors.

maximum likelihood, fixing the coefficients of the two equations concerned at the values estimated at the previous stage.[9]

Computation of the variance-covariance matrix of the parameters is described in full in Appendix A. The argument follows the standard procedure of expanding the score vector. The only complication which arises in our case is the use of different likelihoods at different points in the estimation procedure. We follow Muthén (1984) in resolution of the problems that this raises.

Before imposing the restrictions in (5) and (6) we can use these reduced form estimates to assess the association between immigration attitudes and indicator responses by noting

$$E(y* \,|X, z*) = X(\Gamma_1 \, - \, \Sigma_{12} \, \Sigma_{22}^{-1} \, \Gamma_2) \, + \, \Sigma_{12} \, \Sigma_{22}^{-1} \, z* \tag{7}$$

and calculating the latent regression coefficients $\Sigma_{12} \, \Sigma_{22}^{-1}$.

We then impose the restrictions in (5) and (6) in a further step by minimum distance. The estimation procedure outlined above does not, however, guarantee positive semi definiteness of the estimated asymptotic variance - covariance matrix for the parameter estimates $\hat{\mathbf{\Omega}}$ (see Appendix A for derivation). In practice, we find $\hat{\mathbf{\Omega}}$ to have a few small negative eigenvalues. It can therefore not be used as the weighting matrix. We chose as an alternative weighting matrix the diagonal matrix $\mathrm{dg}(\hat{\mathbf{\Omega}})$ containing the diagonal elements of $\hat{\mathbf{\Omega}}$.[10] Since this is not the optimal weighting matrix the minimised value of the criterion does not give the standard χ^2 test of the restrictions so we use the formula in Newey (1985).[11]

[9]Not all of the questions used are asked in every year of our sample but there is sufficient overlap to identify all reduced form parameters. We require each possible pair of questions to be asked at least once in the same year.

[10]Another idea would be to use the positive semi definite matrix obtained from $\hat{\mathbf{\Omega}}$ by replacing the negative eigenvalues by zeros in the spectral decomposition. We found this to give very unstable results.

[11]Bearing in mind the small-sample concerns raised by Altonji and Segal (1996), we also calculate, for comparison, equally weighted minimum distance estimates using the identity matrix as weighting matrix.

4.3 Identification

Identification is frequently a matter of concern in these types of models (see Bartholomew and Knott 1999, Maddala 1983, Muthén 1979)). We provide a heuristic discussion which establishes identification in our case.

Note that because of the discrete nature of the dependent variables we can estimate only the ratios of the elements of Γ to the standard deviations of the associated components of ϵ. Likewise we can estimate only the matrix of correlations associated with Σ_ϵ. We adopt the identifying normalisation that the diagonal elements in Σ_u and in Σ_w are such as to make the diagonal elements of Σ_ϵ equal to unity.

Identification of M and Σ_v

Fundamental to our procedure is the use of the indicator questions to locate variation in the factors. Identification of M and Σ_v are therefore crucial. We achieve this through the assumptions that each of our indicator questions is indicative of one and only one factor and that all correlation between responses to these questions (conditional on the regressors X) is accounted for by the factor structure.

Specifically, we assume firstly that M is a block diagonal matrix, with only one non-zero element in each row. That is to say, we assume that each response in z^* is indicative of one and only one factor. Secondly, we assume diagonality of the Σ_w matrix, so that all correlation between these responses is accounted for by the factor structure. Finally, we set the diagonal elements of Σ_v to unity, which is simply a normalising assumption. These parameters are then identified by the restriction $\Sigma_{22} = \Sigma_w + M\,\Sigma_v\,M'$.

The elements of M, which are the loadings of the factors on the indicator questions, are identified from the conditional correlations between responses *within* blocks. Remembering the particular block diagonal structure of M, suppose that the ith block has q_i elements. Then there are $q_i\,(q_i-1)/2$ off-diagonal elements in the corresponding block of Σ_{22} from which to identify them. This is sufficient only if $q_i \geq 3$. This is so for each block in our case.

Having identified M, the off-diagonal elements of Σ_v are then identified without further restriction from the remaining elements of Σ_{22}, that is to say from the correlations between elements in different blocks. Notice that we allow for correlation between the factors since Σ_v is not required to be diagonal. Since all conditional correlation between responses in different blocks is assumed to be driven solely by the correlation between factors considerable overidentifying restrictions are involved at this point. We report tests of these restrictions.

Identification of Λ

Now consider identification of the main parameters of interest, Λ. We identify these parameters from the conditional correlations between answers to the indicator questions and the questions on immigration under the assumption that this is driven solely by the role of the hypothesised factors. It may be helpful to note that this is the same source of variation that would be used to identify dependence of immigration on underlying attitudes if immigration responses were regressed on answers to indicator questions.

Specifically, we set $\Sigma_{uw} = 0$ and use $\Sigma_{12} = M\,\Sigma_v\,\Lambda'$. That is to say, we assume that all conditional correlation between responses to the immigration questions and the indicator questions is accounted for by the factors of interest. With M and Σ_v identified elsewhere, this is sufficient to identify Λ if $p \leq q$, which is to say that there are fewer factors than indicator questions - a basic assumption.[12]

Our main focus of attention are the coefficients in Λ and it is therefore important to be clear about comparability of the reported coefficients across rows and columns. Note that $\Lambda = dy^*/df$ and neither y^* nor f, both being latent, have a unique natural

[12]An alternative approach which would work in some cases, though not in this case, and which we would not favour anyway, would be to assume diagonality of Σ_u and use the restriction $\Sigma_{11} = \Sigma_u + \Lambda\,\Sigma_v\,\Lambda'$. This alone gives only $m\,(m-1)/2$ reduced form parameters from which to identify the mp parameters in Λ and is therefore sufficient only if $p \leq (m-1)/2$. This is not so in our example. Besides, this seems to us a less desirable restriction to impose. We do not wish to exclude the existence of other sources of correlation between immigration responses, provided they are orthogonal to the factors of interest.

scale of variation. It is the commonality of normalisation[13] imposed here that justifies comparability of coefficients within Λ.

5 Model Results

5.1 The full sample

We first discuss results we obtain for the full sample. We then split the sample according to skill and educational groups. These results are discussed further below. The underlying probit estimates are reported in Appendix B

We begin by reporting in Table 5 the implied regression coefficients $\Sigma_{12}\,\Sigma_{22}^{-1}$. These are based on imposition of none of the structure implied by (5) or (6) and are included for the indication which they offer of the underlying source of the more structural estimates below. Under the supposed model they should equal $\Lambda\,\Sigma_v\,M'(\Sigma_w + M\,\Sigma_v\,M')^{-1}$. The differing significance of individual attitudinal indicators is driven in part by the differences in numbers of available responses summarised in Table **??**. What is very clear is that the strongest evidence of association is that between indicators of racial attitudes and hostility to immigration from the West Indies and Asia.

Imposing the restrictions in (5) and (6) should afford considerable gains both in interpretative clarity and in precision of estimates. We begin by estimating M and Σ_v, imposing only the substantive assumptions of block diagonality, and diagonality on Σ_w to identify the indicator loadings in M and the correlations between factors in Σ_v. The results are reported in Table Appendix C in Appendix C. Identification of these matrices is crucial to our estimation strategy and it is important that the overidentifying restrictions are accepted - this is comfortably so according to the Newey χ^2 test reported in the Appendix and below Table 6.

We then add the restriction $\Sigma_{uw} = 0$ and use $\Sigma_{12} = \Lambda\,\Sigma_v\,M'$ to identify the main parameters of interest, Λ. We report the estimates of the parameters in Λ in Table

[13]That is to say, the residual variances along the diagonals of Σ_ϵ and Σ_v are each set to unity.

Table 5: Estimates of $\Sigma_{12}\,\Sigma_{22}^{-1}$, all respondents

Variable	Less West Indian		Less Asian		Less Euro		Less Australian	
	Coeff	t-ratio	Coeff	t-ratio	Coeff	t-ratio	Coeff	t-ratio
Racial attitudes								
Marriage	0.0394	0.4907	0.0766	0.7412	0.0151	0.1509	-0.0870	-1.0320
Boss	0.1637	1.4819	0.1271	0.9864	-0.0264	-0.1906	-0.0280	-0.2517
Prejudice	0.3220	4.0393	0.4192	3.4591	0.1432	0.9968	0.0892	0.5577
Joint χ^2_3	73.766		76.045		3.115		1.513	
P-value	0.000		0.000		0.374		0.679	
Job attitudes								
Job loss	0.0261	0.4128	-0.0310	-0.4054	-0.0082	-0.0930	0.0445	0.4743
Find job	-0.0006	-0.0070	0.0109	0.1049	0.1134	0.7903	-0.0240	-0.2469
Wage	0.0631	0.7098	0.0600	0.7422	0.0086	0.0649	0.0131	0.1510
Job security	0.0781	0.9518	0.1484	1.0990	0.0012	0.0091	0.0010	0.0089
Joint χ^2_4	2.877		2.379		1.181		0.514	
P-value	0.579		0.667		0.881		0.972	
Welfare attitudes								
Benefits	0.0132	0.1287	0.0721	0.4759	-0.0246	-0.1307	-0.0421	-0.2618
Need	0.1076	1.1801	0.0679	0.5350	0.1004	1.0756	0.0928	0.8994
More spending	-0.0069	-0.0664	-0.0004	-0.0037	0.0368	0.4415	0.0191	0.2035
Joint χ^2_3	3.423		0.910		2.607		0.929	
P-value	0.331		0.823		0.456		0.819	

Table 6: MDE estimates of Λ, all respondents

Variable	Race		Jobs		Welfare		diag$(\Sigma_u)^*$
	Coeff	t-ratio	Coeff	t-ratio	Coeff	t-ratio	Coeff
West Indian	0.471	11.25	0.158	2.20	0.180	2.90	0.682
Asian	0.540	11.36	0.159	2.09	0.219	3.23	0.578
European	0.119	3.23	0.122	1.64	0.129	2.17	0.953
Aust.,N.Z	0.003	0.08	0.116	1.56	0.091	1.49	0.984
Newey M_1 $\chi^2_{32} = 40.463$ P-value $= 0.145$							
Newey M_2 $\chi^2_{60} = 62.515$ P-value $= 0.387$							
Newey M_3 $\chi^2_{203} = 31592.597$ P-value $= 0.000$							

Restrictions imposed: $\Sigma_{22} = \Sigma_w + M\,\Sigma_v\,M'$, $\Sigma_{12} = \Lambda\,\Sigma_v\,M'$

Newey M_1 is a test of $\Sigma_{22} = \Sigma_w + M\,\Sigma_v\,M'$

Newey M_2 is a joint test of $\Sigma_{22} = \Sigma_w + M\,\Sigma_v\,M'$ and $\Sigma_{12} = \Lambda\,\Sigma_v\,M'$

Newey M_1 is a joint test of $\Sigma_{22} = \Sigma_w + M\,\Sigma_v\,M'$, $\Sigma_{12} = \Lambda\,\Sigma_v\,M'$ and $\Gamma = B\,(\ \Lambda \quad M\ )'$

(6)[14]. The over identifying restrictions are again very easily accepted at usual significance levels. This suggests that it may not be inappropriate to think that the conditional correlations between the immigration responses and responses to the indicator questions can be accounted for through the supposed factor structure.

The most striking result is the strength, both quantitatively and statistically, of the impact of racial attitudes on hostility to immigration from the West Indies or from Asia. There is some evidence of a similar component to attitudes towards European immigration but not to immigration from Australia and New Zealand.

Estimated effects from job insecurity are weaker but there do appear to be significant positive effects on attitudes to immigration from the West Indies and Asia though much less as regards immigration from Europe or the antipodes. Hostility to welfare spending seems similarly correlated. Overall none of the factors seem to have any obvious bearing on attitudes to immigration from Australia or New Zealand. The figures in the last column, headed *diag*(Σ_u), can be interpreted as the proportion of the residual variance regarding attitudes to immigration from the source in question which is not

[14]Equally weightedminimum distance estimates are reported in Appendix Appendix E and are very close.

associated with any of the factors. For immigration from the more ethnically distinct sources, from one half to two thirds of the residual variance remains unaccounted for in terms of the factor model. For immigration from Australia and New Zealand, almost all remains unaccounted for.

These findings tend to suggest that racial prejudice is by far the most important component explaining negative inclinations towards immigration of ethnically different populations. Although labour market fears and welfare concerns are found to have a significant impact, their effects are much lower than that of the racial factor. In this respect the results are similar to those found for the United States by Citrin, Green, Muste and Wong 1997. For ethnically and culturally more similar groups (i.e. Europeans), the picture is very different. Now the estimated contributions of welfare and job concerns are as strong as those of racial prejudices. As regards the final group of Australians and New Zealanders, who are typically culturally very similar and ethnically hardly distinguishable from the majority population, none of these factors seems associated with negative attitudes towards further immigration.[15] Note that the overall response towards these populations is more friendly than towards other groups (see Table (3)), but nevertheless, more immigration is opposed by about 30 percent of the majority population.

The final test statistic reported below Table 6 is for the restriction $A = 0$, $C = 0$ which would allow B to be inferred simply from Γ given our estimates of Λ and M. These restrictions are very strongly rejected and we do not report the estimates of B.

5.2 Skill and Education Groups

Our discussion above suggests that individuals in different sectors of the labour market, or of different skill levels, may have reasons to view immigration differently. It has often been argued that manual workers, as well as less skilled workers, are more vulnerable

[15]These results go some way to addressing the agenda for future research raised by Citrin, Green, Muste and Wong (1997, p,877): "it is unknown whether the public would be more receptive if the main body of immigrants more closely resembled the dominant segment of the 'native' population in appearance and culture."

to low skilled immigration (Borjas 1999). If so, then one might expect that this would show up in a difference in the factors driving attitudes of workers in distinct labour market segments.

Our simple summary statistics on the attitude responses, split up in different labour market groups (see table 3), indicate that attitudes towards further immigration tend to be more hostile among manual than non-manual workers; furthermore, hostility decreases with educational background. Although our analysis above takes account of variables describing these segments by incorporating them as regressors, we now estimate separate systems for the different groups. We estimate separate reduced forms for the different subgroups (for example, manual and non-manual workers). The restrictions imposed differ in allowing all coefficients of the Λ matrix to vary between population subgroups.[16] These are typically the strongest restrictions accepted and allow identification of Λ_i.[17]

Manual and non-manual workers

We report results of the coefficients in Λ_i for manual and non-manual workers in Table (7). The Newey test indicates that the restrictions imposed are clearly accepted. The results show that the impact of racial prejudice remains strong amongst manual workers. The influence of the other two components is very small, and estimates are very imprecise. Again, the racial factor is important for attitudes towards further immigration from Asia and the West Indies, less important for Europe, and vanishes for Australia/New Zealand.

For non-manual workers, the influences of the race factor remain strong, but the relative importance of labour market concerns and welfare concerns increases. For the first two immigration groups, the effect is of a magnitude approaching that of the racial factor. For Europeans, job and welfare concerns are strong, while the racial

[16]The restrictions imposed are $\Sigma_{22i} = \Sigma_w + M\,\Sigma_v\,M'$ and $\Sigma_{12i} = M\,\Sigma_v\,\Lambda_i'$, where i corresponds to the subgroups (for example, manual and non manual).

[17]We restrict the sample to the employed. This has almost no effect on results and we do not provide a separate Table for these.

Table 7: MDE estimates of Λ, by manual/non-manual, employed only

Variable	Race		Jobs		Welfare		diag(Σ_u)
	Coeff	t-ratio	Coeff	t-ratio	Coeff	t-ratio	Coeff
				Manual			
West Indian	0.482	5.64	0.130	0.80	0.089	0.69	0.721
Asian	0.551	5.76	0.137	0.68	0.086	0.59	0.645
European	0.132	1.93	0.116	0.71	0.130	1.15	0.950
Aust.,N.Z	-0.035	-0.47	-0.017	-0.10	0.109	0.90	0.988
				Non-Manual			
West Indian	0.442	6.80	0.235	1.80	0.310	3.04	0.607
Asian	0.483	6.86	0.308	2.54	0.416	3.90	0.443
European	0.073	1.22	0.226	1.74	0.197	2.19	0.923
Aust.,N.Z	-0.010	-0.14	0.238	1.72	0.117	1.19	0.948
Newey M_2 $\chi^2_{133} = 150.833$ P-value $= 0.138$							
Newey M_1 $\chi^2_{77} = 84.083$ P-value $= 0.272$							

Restrictions imposed: $\Sigma_{22i} = \Sigma_w + M\,\Sigma_v\,M'$, $\Sigma_{12i} = \Lambda_i\,\Sigma_v\,M'$ Newey M_2 is a joint test of $\Sigma_{22i} = \Sigma_w + M\,\Sigma_v\,M'$ and $\Sigma_{12i} = \Lambda_i\,\Sigma_v\,M'$ for all i. Newey M_1 is a test of $\Sigma_{22i} = \Sigma_w + M\,\Sigma_v\,M'$ for all$i$

factor practically vanishes. For Australians and New Zealanders, the influence of the race factor is also zero, but there is now some evidence of the presence of welfare and job factors.

It is notable that welfare and labour market concerns have a negligible impact on the opinions of manual workers towards any of the immigrant populations, in sharp contrast to the non-manual workers. It may be that in reality economic competition from potential immigrants is strongest for the more skilled. Alternatively, the strong presence of the racial component for this group may be an indication that the process of opinion formation is being based on simpler prejudicial perceptions rather than more elaborate opinions about the impact or consequences of immigration. To further investigate these issues, we now split up the sample into three education groups.

Table 8: MDE estimates of Λ by education group, employed only

Variable	Race		Jobs		Welfare		diag(Σ_u)
	Coeff	t-ratio	Coeff	t-ratio	Coeff	t-ratio	Coeff
			High Education				
West Indian	0.385	1.84	0.666	1.91	0.742	2.50	0.019
Asian	0.411	2.15	0.696	2.08	0.790	2.62	0.00
European	-0.005	-0.03	0.539	1.53	0.497	1.83	0.645
Australian	-0.024	-0.15	0.460	1.43	0.433	1.61	0.741
			Medium Education				
West Indian	0.429	4.28	0.235	1.17	0.338	2.29	0.613
Asian	0.445	4.49	0.262	1.32	0.435	2.85	0.505
European	0.078	0.94	0.237	1.13	0.275	1.85	0.893
Australian	0.043	0.48	0.242	1.06	0.093	0.64	0.944
			Low Education				
West Indian	0.498	7.94	0.096	0.67	0.076	0.74	0.718
Asian	0.574	7.40	0.112	0.65	0.113	0.93	0.615
European	0.127	2.47	0.089	0.59	0.064	0.71	0.971
Australian	-0.034	-0.62	0.039	0.26	0.074	0.78	0.995
Newey M_2 $\chi^2_{206} = 164.527$ P-value = 0.985							
Newey M_1 $\chi^2_{122} = 76.668$ P-value = 1.000							

Restrictions imposed: $\Sigma_{22i} = \Sigma_w + M\,\Sigma_v\,M'$, $\Sigma_{12i} = \Lambda_i\,\Sigma_v\,M'$ Newey M_2 is a joint test of $\Sigma_{22i} = \Sigma_w + M\,\Sigma_v\,M'$ and $\Sigma_{12i} = \Lambda_i\,\Sigma_v\,M'$ for all i. Newey M_1 is a test of $\Sigma_{22i} = \Sigma_w + M\,\Sigma_v\,M'$ for all$i$.

Low, medium, and high education

We refer to the three education groups as low education, medium education, and high education according to the age at which the respondent left full time education. Results for the coefficients in the Λ_i matrices are displayed in Table (8). The very high P-value indicates that the restrictions are very comfortably accepted. [18]

Racial factors are influential in all the three groups, though most strongly in the group with lowest education. This is the only group in which racial factors seem relevant to European immigration. Labour market concerns are evident only for the highest education group, and welfare concerns only for the high and medium education groups. The relative importance of economic as against racial factors has a clear education gradient, figuring more prominently the higher the education level of the subsample considered.

These results conflict with the common expectation that it is hostility towards immigration amongst the least skilled and least educated that is driven by economic concerns. In fact, our results indicate that it is the views of the most educated that are most influenced by economic factors.

6 Discussion and Conclusion

It is commonly argued that immigrants may be a burden on welfare and public services, and that immigration may lead to job displacement of native workers (see Borjas 1999 for an example of such arguments or Simon 1989 for a more skeptical view). If these views are shared by large numbers of the public then (independently of whether they are justified) such concerns may be an important component of aversion towards further immigration. If these considerations contribute towards opinions on migration issues, then policies related to labour market security and welfare spending may have important secondary effects on public opinion about and resistance towards further immigration. By way of contrast, if hostility towards immigration is rooted in racial

[18] Note that we have imposed the binding restriction of nonnegativity on one element of $\text{diag}(\Sigma_u)$.

hostility then it may be less responsive to more economic interventions.

This paper attempts to assess the importance of welfare and labour market concerns, as well as racially inclined considerations for the formation of opinions towards further immigration. Our results are interesting in several respects. First, we do find evidence that both welfare and labour market concerns matter for the opinion towards further immigration. However, by far the most important single factor appears to be racially motivated opposition.

Second, we find that attitudes towards immigration, and the relative importance of the three factors, differ according to the ethnic origin of the immigrant population concerned. Our results indicate that a negative attitude towards further immigration is strongly related to all the three factors for Asians and West Indians, while it is less strongly explained for Europeans. The factors we have defined hardly explain at all the attitudes towards Australians and New Zealanders, which suggests that opposition towards immigration from such sources is scarcely linked to any of our systematic factors. The dominant racial factor is particularly strong for the Asian and West Indian population, the two groups that are ethnically more different.

Third, we do not find strong evidence that the greater labour market concerns sometimes believed to exist among unskilled and manual workers are reflected in opposition towards further immigration. The underlying supposition of such a belief that potential immigrants are in fact mostly unskilled, selecting themselves into manual jobs, may well be unfounded anyway. We find that welfare and labour market concerns are more closely linked to opinions towards further immigration for non-manual workers than for manual workers, and for the more educated rather than the less educated. Again, as above, there are for all subgroups distinct differences according to origin country, with racial factors being stronger for ethnically more different populations.

These results conflict with the frequently expressed opinion that greater hostility to immigration amongst the economically more disadvantaged sections of the population is driven by fear of economic competition in labour markets. On the contrary, we find an association between labour market concerns and hostility to immigration only

amongst better educated and more skilled sections of the labour force. Antipathy towards immigration amongst manual and poorly educated workers is associated only and strongly with racial attitudes. This may reflect differences in the process of opinion formation towards immigration depending on levels of education. There are at least two explanations for this: Either education itself makes economic arguments more accessible to those educated, or education attracts those more inclined to think in such terms.

Economic policy interventions, which reduce job insecurity or welfare concerns, appear likely therefore to be effective only in reducing hostility to immigration amongst the better educated and more highly skilled sections of the labour market. Addressing the antipathy to immigration at the lower end of the spectrum of skills and education requires engaging the stereotypes which underlie the racial antagonisms driving these attitudes.

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Appendix A Estimation

We estimate the reduced form in a two stage procedure to obtain estimates of Γ and Σ_ϵ. We estimate Γ by a series of independent (ordered) probits. We then estimate the components of Σ_ϵ by pairwise bivariate Maximum Likelihood, conditional upon the estimated probit coefficients. Not all of the questions used are asked in every year of our sample but there is sufficient overlap to identify all reduced form parameters.

This estimation procedure is similar to that suggested by Muthén (1984) or by Browne and Arminger (1995). Our derivation of the variance covariance matrix for the estimates draws on the arguments of Muthén and Satorra (1995).

Let θ_1 denote the vector of parameters estimated by independent ordered probits in the first stage (which is to say the vector of the elements of Γ) and let θ_2 denote the vector of parameters estimated by pairwise bivariate likelihood maximisation at the second stage (which is to say the vector of all generically distinct off-diagonal elements of Σ_ϵ). Let $\theta \equiv (\theta_1', , \theta_2')'$ denote the vector of all reduced form parameters.

Let $\mathbf{l}^i(\theta)$ denote a vector of the same dimensions as θ the elements of which are the log likelihood contributions of the ith respondent to estimation of the corresponding elements of θ. Note that different likelihoods are used to estimate parameters at different stages and in different equations. Furthermore let

$$\mathbf{l}^i(\theta) \equiv (l_1^i(\theta_1), \mathbf{l}_2^i(\theta_1, \theta_2)')'.$$

define a partition of $\mathbf{l}^i(\theta)$ into elements corresponding to first and second stage estimations.

The estimates $\hat{\theta} \equiv (\hat{\theta}_1', \hat{\theta}_2')'$ solve the score equations

$$\begin{aligned} \sum_i \mathbf{q}_1^i(\hat{\theta}_1) &\equiv \sum_i \frac{\partial}{\partial \theta_1} \mathbf{l}_1^i(\hat{\theta}_1) = \mathbf{0} \\ \sum_i \mathbf{q}_2^i(\hat{\theta}_1, \hat{\theta}_2) &\equiv \sum_i \frac{\partial}{\partial \theta_2} \mathbf{l}_2^i(\hat{\theta}_1, \hat{\theta}_2) = \mathbf{0}. \end{aligned}$$

Denote by $\mathbf{q}^i(\hat{\theta}) \equiv (\mathbf{q}_1^i(\hat{\theta}_1)', \mathbf{q}_2^i(\hat{\theta}_1, \hat{\theta}_2)')'$ the vector of stacked score contributions for the ith respondent and by $\mathbf{q}(\hat{\theta}) \equiv \sum_i \mathbf{q}^i(\hat{\theta}) = \mathbf{0}$ the score vector.

By the Mean Value Theorem

$$\mathbf{0} = \mathbf{q}(\hat{\theta}) = \mathbf{q}(\theta) + \mathbf{Q}(\tilde{\theta})(\hat{\theta} - \theta)$$

for some $\tilde{\theta}$ between $\hat{\theta}$ and θ, where $\mathbf{Q}(\theta) \equiv \partial \mathbf{q}(\theta)/\partial\theta$. Therefore

$$\sqrt{n}(\hat{\theta} - \theta) = (-\frac{1}{n}\mathbf{Q}(\tilde{\theta}))^{-1}\frac{1}{\sqrt{n}}\mathbf{q}(\theta).$$

Since

$$\frac{1}{\sqrt{n}}\mathbf{q}(\theta) \to N(\mathbf{0}, \mathbf{V}),$$

where $\mathbf{V} \equiv plim\frac{1}{n}\sum_i \mathbf{q}^i(\theta)\mathbf{q}^i(\theta)'$, and $\hat{\theta} \to \theta$, we have

$$\sqrt{n}(\hat{\theta} - \theta) \to N(\mathbf{0}, \mathbf{A}^{-1}\mathbf{V}\mathbf{A}'^{-1}),$$

where $\mathbf{A} \equiv \frac{1}{n}\mathbf{Q}(\theta)$.

Note that under standard regularity conditions

$$\begin{aligned}
\hat{\mathbf{V}} &\equiv \frac{1}{n}\sum_i \mathbf{q}^i(\hat{\theta})\mathbf{q}^i(\hat{\theta})' \to \mathbf{V} \\
\hat{\mathbf{A}} &\equiv \frac{1}{n}\sum_i \frac{\partial}{\partial\theta}\mathbf{l}^i(\hat{\theta})\frac{\partial}{\partial\theta}\mathbf{l}^i(\hat{\theta})' \to \mathbf{A}
\end{aligned}$$

so that we can consistently estimate $\mathbf{V}$ and the block lower triangular matrix $\mathbf{A}$ by taking the outer products of gradients indicated. We can thereby consistently estimate the asymptotic variance covariance matrix of the estimates by $\hat{\mathbf{\Omega}} \equiv \hat{\mathbf{A}}^{-1}\hat{\mathbf{V}}\hat{\mathbf{A}}'^{-1}$.

Appendix B First Step Probit Results

Table A1: Sample Sizes by Year

Variables	**83**	**84**	**85**	**86**	**87**	**89**	**90**	**Total**
Less West Indian	1140	1051		757		883	804	4635
Less Asian	1156	1060		756		885	804	4661
Less European	1151	1056		756		883	803	4649
Less Australian	1155	1058		754		882	806	4655
Marriage	1186	1113		833		1015		4147
Boss	1199	1117		850		1022		4188
Prejudice	1218	1118	1185	1615	1945	2085	897	10063
Job Loss	1221	1132	1193	1631		2094	1793	9064
Find Job						652		652
Wage Exp	596	578	600	846	976	1058	918	5572
Job Security						590		590
Benefits	1149	1052	1121	1545	1849	1943	1641	10300
Need					923	1820		2743
More spending					924	1825		2749

Table A2: Immigration Probits

Variable	Less West Indian		Less Asian		Less Euro		Less Australian	
	Coeff	t-ratio	Coeff	t-ratio	Coeff	t-ratio	Coeff	t-ratio
Unemployment rate	-0.679	-0.51	-1.611	-1.17	1.098	0.87	-0.564	-0.43
Ethnic minor. conc.	0.007	0.32	0.036	1.46	0.012	0.54	0.019	0.83
Income Rank	0.251	2.50	0.196	1.99	0.039	0.40	0.129	1.34
Manual worker	0.040	0.70	0.111	1.92	0.119	2.26	0.029	0.53
Ever unemployed	-0.032	-0.43	0.000	0.00	-0.013	-0.19	0.030	0.44
Ever long term unemp.	0.051	0.40	-0.055	-0.42	0.021	0.18	-0.144	-1.25
Female	-0.008	-0.16	-0.014	-0.27	0.047	0.97	0.015	0.30
Compulsory Education	0.098	1.68	0.168	2.81	0.101	1.85	0.013	0.24
High Education Level	-0.422	-5.10	-0.487	-5.75	-0.328	-3.97	-0.298	-3.40
Age	1.637	2.28	0.911	1.24	3.096	4.66	4.523	6.38
Age^2	-0.733	-0.98	-0.319	-0.42	-2.693	-3.97	-5.125	-7.05
Catholic	-0.180	-2.32	-0.225	-2.70	-0.060	-0.77	-0.075	-0.94
No religion	0.023	0.43	-0.029	-0.52	0.036	0.72	0.072	1.39
Sample size	4624		4650		4638		4644	

Table A3: Racial Attitude Probits

Variable	Marriage		Boss		Prejudice	
	Coeff	t-ratio	Coeff	t-ratio	Coeff	t-ratio
Unemployment rate	2.249	1.71	-0.256	-0.18	-0.680	-0.84
Ethnic minor. conc.	0.094	3.69	0.013	0.44	0.079	4.61
Income Rank	0.296	2.68	-0.021	-0.17	0.386	5.44
Manual worker	0.075	1.43	-0.035	-0.58	-0.091	-2.43
Ever unemployed	-0.007	-0.10	0.016	0.21	0.082	1.52
Ever long term unemp.	-0.006	-0.04	0.125	0.89	-0.081	-0.94
Female	0.060	1.21	-0.128	-2.24	-0.202	-5.99
Compulsory Education	0.109	1.88	0.152	2.31	0.051	1.23
High Education Level	-0.314	-3.44	-0.155	-1.36	-0.322	-5.36
Age/100	4.067	5.81	-1.783	-2.33	0.534	1.15
$Age^2/10000$	-2.848	-4.02	2.217	2.85	-0.564	-1.19
Catholic	-0.095	-1.21	-0.239	-2.29	-0.326	-5.50
No religion	-0.087	-1.53	0.049	0.80	0.001	0.02
Sample size	4143		4184		10049	

Table A4: Job Attitudes Probits

Variable	Job Loss		Find Job		Wage		Job Security	
	Coeff	t-ratio	Coeff	t-ratio	Coeff	t-ratio	Coeff	t-ratio
Unemployment rate	0.127	0.11	15.056	4.06	2.810	3.03	-2.757	-0.69
Ethnic minor. conc.	-0.013	-0.56	-0.091	-1.78	-0.050	-2.47	0.024	0.43
Income Rank	-1.596	-15.22	-0.625	-2.89	-0.802	-8.67	-0.652	-2.47
Manual worker	0.004	0.07	0.172	1.52	0.258	5.04	0.239	1.89
Ever unemployed	0.021	0.30	0.166	1.03	0.001	0.01	1.054	6.66
Ever long term unemp.	0.041	0.29	0.202	0.75	0.105	1.15	0.572	2.68
Female	0.342	6.53	-0.143	-1.39	0.332	6.97	-0.076	-0.66
Compulsory Education	-0.045	-0.82	-0.075	-0.64	0.086	1.66	0.035	0.27
High Education Level	0.114	1.68	0.051	0.30	0.055	0.88	0.081	0.44
Age/100	-8.743	-9.00	3.494	1.79	2.015	2.66	1.878	0.65
$Age^2/10000$	12.325	10.82	-0.924	-0.43	-1.447	-1.57	-0.568	-0.16
Catholic	-0.043	-0.51	-0.065	-0.38	0.035	0.55	-0.071	-0.39
No religion	-0.071	-1.43	0.078	0.75	0.038	0.84	0.028	0.23
Sample size	9045		651		5566		589	

Table A5: Welfare Attitude Probits

Variable	Benefits		Need		More Spending	
	Coeff	t-ratio	Coeff	t-ratio	Coeff	t-ratio
Unemployment rate	-6.966	-7.29	-8.028	-5.99	-3.380	-2.43
Ethnic minor. conc.	0.014	0.76	0.055	2.08	-0.020	-0.77
Income Rank	0.461	5.06	0.169	1.51	0.615	5.64
Manual worker	-0.147	-3.37	0.071	1.14	-0.133	-2.29
Ever unemployed	-0.212	-3.24	-0.059	-0.67	-0.016	-0.17
Ever long term unemp.	-0.188	-1.47	-0.132	-1.09	-0.087	-0.67
Female	0.054	1.16	0.069	1.28	0.085	1.61
Compulsory Education	0.037	0.80	0.247	3.51	0.127	1.98
High Education Level	-0.416	-6.26	-0.387	-3.82	-0.133	-1.47
Age/100	-0.935	-1.84	0.483	0.59	-1.641	-2.01
$Age^2/10000$	2.052	4.00	0.652	0.76	1.141	1.37
Catholic	-0.237	-3.61	-0.087	-1.10	-0.306	-3.60
No religion	-0.148	-3.39	-0.050	-0.86	-0.120	-2.06
Sample size	10282		2740		2746	

Appendix C Minimum distance estimates of M and $\sum$

Table A6: MD estimates of M and Σ_v, all respondents

M

Variable	Race		Jobs		Welfare		diag(Σ_w)
	Coeff	t-ratio	Coeff	t-ratio	Coeff	t-ratio	Coeff
Marriage	0.763	17.27	–	–	–	–	0.418
Boss	0.841	16.49	–	–	–	–	0.292
Prejudice	0.780	18.71	–	–	–	–	0.391
Job Loss	–	–	0.472	5.79	–	–	0.778
Find Job	–	–	0.377	5.04	–	–	0.858
Wage	–	–	0.139	2.01	–	–	0.981
Job security	–	–	0.773	6.73	–	–	0.402
Benefits	–	–	–	–	0.678	14.82	0.541
Need	–	–	–	–	0.722	16.06	0.478
More Spending	–	–	–	–	0.497	12.86	0.753

Σ_v

Variable	Race		Jobs		Welfare	
	Coeff	t-ratio	Coeff	t-ratio	Coeff	t-ratio
Race	1.000	-	0.002	0.03	0.321	6.81
Jobs	0.002	0.03	1.000	-	-0.284	-3.89
Welfare	0.321	6.81	-0.284	-3.89	1.000	-

Restrictions imposed: $\Sigma_{22} = \Sigma_w + M\,\Sigma_v\,M'$

Newey $\chi^2_{32} = 40.463$ P-value $= 0.145$

The figures in the last column of the uppermost table, headed $diag(\Sigma_w)$, indicate the proportion of the residual variance for the response in question which is not attributable to the relevant factor.

Appendix D Wording of the Questions

Table B1: Immigration Questions				
Response	West Indians	Indians and Pakistanis	Common Market Countries (Europe)	Australians and New Zealanders
more settlement,				
about the same	34.79	31.06	55.29	68.01
less settlement	65.21	68.94	44.71	31.99
	100.00	100.00	100.00	100.00

Wording of Question: Britain controls the number of people from abroad that are allowed to settle in this country. Please say for each of the groups below whether you think Britain should allow more settlement, less settlement, or about the same as now.

Table B 2: Racial Acceptability Questions		
Response	Opposition to Marriage	Opposition to Boss
Not mind	48.09	81.11
Mind	51.91	18.89
	100.00	100.00

Wording of Question: Do you think most people in Britain would mind (or not mind) if one of their close relatives were to marry a person of Asian / West Indian origin? ... and you personally? Would you mind or not mind? Do you think most people in Britain would mind (or not mind) if a suitably qualified person of Asian / West Indian origin were appointed as their boss? ... and you personally? Would you mind or not mind?

Table B 3: Racial Prejudice	
Response	
Not prejudiced at all	63.73
Very or a little prejudiced	36.27
	100.00

Wording of Question: How would you describe yourself? As very prejudiced against people of other races, a little prejudiced, or not prejudiced at all?

Table B 4: Fear of Job Loss	
unlikely	94.29
likely	5.71
	100.00

Wording of Question: If employed: Thinking now about your own job, how likely (or unlikely) is it that you will leave this employer over the next year for any reason? ... Why do you think you will leave?
People recorded as likely are those who answered *very likely* or *quite likely* to the first question and gave as reason *firm will close down*, *I will be declared redundant*, or *my contract of employment will expire*.

Table B 5: Ease of Finding Job	
very easy	6.90
fairly easy	29.04
neither	16.07
fairly difficult	27.60
very difficult	20.39
	100.00

Wording of Question: If in paid job for 10 or more hours a week: If you lost your job for any reason, and were looking actively for another one, how easy, or difficult, do you think it would be for you to find an acceptable job? If in paid job for less than 10 hours a week or no paid job: If you were looking actively, how easy, or difficult, do you think it would be for you to find an acceptable job?

Table B 6: Wage Expectations	
rise by more than cost of living	16.86
rise by same as cost of living	48.15
rise by less than cost of living	26.60
not rise at all	8.39
	100.00

Wording of Question: If employee: If you stay in this job, would you expect your wages or salary over the coming year to ...

Table B 7: Job Security	
strongly agree	18.37
agree	42.18
neither	18.66
disagree	16.13
strongly disagree	4.66
	100.00

Wording of Question: If in paid work for 10 or more hours a week, please tick one box to show how much you agree or disagree that [this statement] applies to your job: My job is secure.

Table B 8: Level of Benefits	
too low or neither	65.97
too high	34.03
	100.00

Wording of Question: Opinions differ about the level of benefits for the unemployed. Which of these ... statements comes closest to your own: *Benefits for the unemployed are too low and cause hardship* or *Benefits for the unemployed are too high and discourage people from finding jobs.*
In later years, people are allowed to agree to both - in all years we categorise according to whether people accept only the second statement.

Table B 9: Attitudes to Welfare

Responses	Need	More spending
strongly agree	9.93	16.76
agree	35.52	42.93
neither	25.95	23.00
disagree	22.67	15.58
strongly disagree	5.93	1.73
	100.00	100.00

Wording of Question: Please tick one box for each statement below to show how much you agree or disagree with it.
Many people who get social security do not really deserve any help.
The government should spend more money on welfare benefits for the poor, even if it leads to higher taxes.
We reverse the answers to the first statement.

Appendix E Equally weighted MDE

Table 9: MDE estimates of Λ, all respondents

Variable	Race		Jobs		Welfare		diag$(\Sigma_u)^*$
	Coeff	t-ratio	Coeff	t-ratio	Coeff	t-ratio	Coeff
West Indian	0.459	10.55	0.181	2.25	0.191	2.76	0.680
Asian	0.523	10.51	0.201	2.42	0.239	3.12	0.571
European	0.106	2.71	0.153	1.90	0.147	2.17	0.946
Aust.,N.Z	-0.003	-0.08	0.133	1.66	0.092	1.36	0.981
Newey M_1 $\chi^2_{32} = 40.109$ P-value $= 0.154$							
Newey M_2 $\chi^2_{60} = 62.348$ P-value $= 0.393$							
Newey M_3 $\chi^2_{203} = 31838.522$ P-value $= 0.000$							

Restrictions imposed: $\Sigma_{22} = \Sigma_w + M\,\Sigma_v\,M'$, $\Sigma_{12} = \Lambda\,\Sigma_v\,M'$
Newey M_1 is a test of $\Sigma_{22} = \Sigma_w + M\,\Sigma_v\,M'$
Newey M_2 is a joint test of $\Sigma_{22} = \Sigma_w + M\,\Sigma_v\,M'$ and $\Sigma_{12} = \Lambda\,\Sigma_v\,M'$
Newey M_1 is a joint test of $\Sigma_{22} = \Sigma_w + M\,\Sigma_v\,M'$, $\Sigma_{12} = \Lambda\,\Sigma_v\,M'$ and $\Gamma = B\,(\ \Lambda \quad M\ )'$